



# IMO

## SCO INTERNATIONAL MATH OLYMPIAD 2023-24

# CLASS 12

QUESTION PAPER SET  
**H**

DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

### Guidelines for the Candidate

1. Before the exam begins, you will have an additional 20 minutes to complete the OMR Sheet with personal information.
2. On the OMR Sheet, clearly write your name, **school code, class, roll number, and mobile number**..
3. Four sections make up the question paper:

**General Math ,Reason/Assertion ,Case Study and Achievers Section** (5 Questions).

**Total Questions - 50**

4. Every inquiry must be answered. There are no failing grades. Calculator use is not allowed.
5. There is just ONE right response. Select ONE response choice only.
6. Use only an HB pencil or a blue or black ballpoint pen to indicate your choice of responses by darkening the corresponding circles on the OMR Sheet. E.g.

**Q.1: What is the capital of India?**

- A. Kolkata B. Mumbai C. Delhi D. Chennai

You must shade the circle next to option C on the OMR Sheet since that is the right response.



7. At the conclusion of the test, hand over the OMR Sheet to the Invigilator.
8. Before attempting the paper, kindly provide your personal information in the box provided on this page. .



Name:.....

Registration ID:..... Contact No.:.....

1.	<p>Given the functions <math>h(x) = 2x + 3</math> and <math>k(x) = x^2 - 1</math>, what will be the value of composite function <math>(h \circ k)(x)</math> when <math>x = 4</math>?</p> <p>A) 31 B) 32 C) 30 D) 33</p>
2.	<p><b>Assertion:</b> Given a set <math>C = \{a, b, c\}</math> and a set <math>D = \{x, y, z\}</math>. The relation from set C to D will be <math>R = \{(a, x), (b, y), (c, z)\}</math>. <b>Reason:</b> We are defining relation from set C to D, so it will map each element from C to each element of D but only once. Like first term mapped to each other, second term to each other and so on.</p> <p>A. Only Assertion is true B. Only Reason is true C. Both Assertion and Reason are true and Reason is the correct explanation of the assertion D. Both Assertion and Reason are true but Reason is not the correct explanation of the Assertion</p>
3.	<p>The domain of the function <math>f(x) = \frac{\sqrt{5x-1}}{x^2-9}</math> is:</p> <p>A) <math>(-\infty, -3) \cup (-3, \frac{1}{5}) \cup (\frac{1}{5}, 3) \cup (3, +\infty)</math> B) <math>(\infty, -3) \cup (-3, \frac{1}{5}) \cup (\frac{1}{5}, 3) \cup (3, +\infty)</math> C) <math>(-\infty, 3) \cup (-3, \frac{1}{5}) \cup (\frac{1}{5}, 3) \cup (3, +\infty)</math> D) None of these</p>
4.	<p>What is the principal range of the function <math>\tan^{-1}(x)</math>?</p> <p>A) <math>(-\frac{\pi}{2}, \frac{\pi}{2})</math> B) <math>(0, \frac{\pi}{2})</math> C) <math>(-\frac{\pi}{4}, \frac{\pi}{4})</math> D) <math>(-\pi, \pi)</math></p>
5.	<p>If the value of <math>\sin^{-1}(0.7) = \frac{\pi}{3}</math>, then the value of <math>\cos^{-1}(0.7)</math> will be:</p> <p>A) <math>-\pi</math> B) <math>\frac{\pi}{6}</math> C) <math>\frac{2\pi}{3}</math> D) <math>-\frac{\pi}{3}</math></p>
6.	<p><b>Assertion:</b> If <math>\cos^{-1}(2x) = \frac{\pi}{3}</math>, then the value of <math>x = 2</math> <b>Reason:</b> The value of <math>\cos \frac{\pi}{3} = \frac{\sqrt{3}}{2}</math></p> <p>A. Only Assertion is true B. Only Reason is true</p>

	<p>C. Both Assertion and Reason are true and Reason is the correct explanation of the assertion</p> <p>D. Neither Assertion nor Reason is true</p>
7.	<p>In the system of linear equations <math>2x + 3y = 7</math> and <math>4x - y = 5</math>, how many solutions exist?</p> <p>A) Multiple solutions</p> <p>B) No solution</p> <p>C) Unique solution</p> <p>D) Two solutions</p>
8.	<p>If a square matrix A is diagonalizable, what can be said about its eigenvalues and eigenvectors?</p> <p>A) A has real eigenvalues and linearly independent eigenvectors.</p> <p>B) A has complex eigenvalues and orthogonal eigenvectors.</p> <p>C) A has real eigenvalues and orthogonal eigenvectors.</p> <p>D) A has complex eigenvalues and linearly independent eigenvectors.</p>
9.	<p><b>Assertion:</b> If A and B are similar matrices, then their powers <math>A^n</math> and <math>B^n</math> are always equal.</p> <p><b>Reason:</b> Similar matrices have the same eigenvalues and eigenvectors, which ensures that their powers <math>A^n</math> and <math>B^n</math> are identical for all positive integers n.</p> <p>A) Both the assertion and reason are true, and the reason is a correct explanation of the assertion.</p> <p>B) Both the assertion and reason are true, but the reason is NOT a correct explanation of the assertion.</p> <p>C) The assertion is true, but the reason is false.</p> <p>D) Both the assertion and reason are false.</p>
10.	<p>Which matrix operation is NOT commutative for all square matrices A and B?</p> <p>A) Addition</p> <p>B) Subtraction</p> <p>C) Multiplication</p> <p>D) Transposition</p>
11.	<p>What is the determinant of the 4x4 identity matrix (I)?</p> <p>A) 1</p> <p>B) 0</p> <p>C) 4</p> <p>D) -1</p>
12.	<p>What is the determinant of the product of two square matrices, <math>\det(AB)</math>, where A and B are square matrices of the same size?</p> <p>A) <math>\det(A) + \det(B)</math></p> <p>B) <math>\det(A) * \det(B)</math></p> <p>C) <math>\det(A) - \det(B)</math></p> <p>D) It cannot be determined without knowing the matrices A and B.</p>

13.	<p>For a square matrix A, what can you conclude if the determinant of A is equal to 0?</p> <p>A) A is invertible (non-singular)  B) A is non-invertible (singular)  C) A has all non-zero eigenvalues  D) A has orthogonal eigenvectors</p>
14.	<p><b>Assertion:</b> If a function <math>f(x)</math> is continuous on the closed interval <math>[a,b]</math> and <math>f(a) &lt; 0 &lt; f(b)</math>, then there exists at least one value of <math>x</math> in the open interval <math>(a,b)</math> for which <math>f(x)=0</math>.</p> <p><b>Reason:</b> This is a direct consequence of the Intermediate Value Theorem (IVT), which states that if a continuous function <math>f(x)</math> on a closed interval <math>[a,b]</math> takes on values of different signs at the endpoints (<math>f(a) &lt; 0</math> and <math>f(b) &gt; 0</math>), then it must take on every value between <math>f(a)</math> and <math>f(b)</math> at least once in the open interval <math>(a,b)</math>.</p> <p>A) Both the assertion and reason are true, and the reason is a correct explanation of the assertion.  B) Both the assertion and reason are true, but the reason is NOT a correct explanation of the assertion.  C) The assertion is true, but the reason is false.  D) Both the assertion and reason are false.</p>
15.	<p>If <math>f(x) = x^2 - 4x + 3</math> on the interval <math>[0, 3]</math>, which of the following statements is true?</p> <p>A) The conditions of Rolle's Theorem are satisfied.  B) The function is not continuous on <math>[0, 3]</math>.  C) The function is not differentiable on <math>(0, 3)</math>.  D) Rolle's Theorem cannot be applied to this function.</p>
16.	<p>A car is travelling along a straight road. Its position <math>s(t)</math> at time <math>t</math> is given by <math>s(t) = 2t^3 - 4t^2 + 5t - 1</math> metres.</p> <p>What is the velocity of the car at <math>t = 2</math> sec?</p> <p>A) 12 m/s  B) 15 m/s  C) 13 m/s  D) 10 m/s</p>
17.	<p><b>Assertion:</b> The marginal cost of producing 4 units of a certain item is 13 units of currency per unit.</p> <p><b>Reason:</b> The cost function for producing <math>x</math> units of the item is <math>C(x) = 2x^2 + 5x + 10</math></p> <p>A) The assertion is false, and the reason is true.  B) The assertion is true, and the reason is true, and the reason is a valid explanation for the assertion.  C) The assertion is true, and the reason is true, but the reason is not a valid explanation for the assertion.  D) The assertion is false, and the reason is false.</p>
18.	<p>What are the maximum and minimum values of the function <math>f(x) = 2x^3 - 6x^2 + 3x + 1</math> on the interval <math>[-1,3]</math>?</p>

	<p>A) Maximum at <math>x = 1</math>, Minimum at <math>x = -1</math>            B) Maximum at <math>x = -1</math>, Minimum at <math>x = 1</math>            C) Maximum at <math>x = 3</math>, Minimum at <math>x = -1</math>            D) Maximum at <math>x = -1</math>, Minimum at <math>x = 3</math></p>
19.	<p>What will be the value of <math>\int_{\frac{1}{4}}^{\frac{1}{2}} \frac{1}{\sqrt{x}} dx</math>?</p> <p>A) <math>2\sqrt{x} + C</math>            B) <math>2\ln(\sqrt{x}) + C</math>            C) <math>2\ln(x) + C</math>            D) <math>\frac{1}{2\sqrt{x}} + C</math></p>
20.	<p><b>Assertion:</b> The integral <math>\int_{\frac{1}{2}}^{\frac{1}{4}} x \cos(x) dx</math> is equal to <math>x \sin(x) + \cos(x) + C</math>  <b>Reason:</b> This result is obtained by applying integration by parts to the given integral.</p> <p>A) The assertion is true, and the reason is true, and the reason is a valid explanation for the assertion.            B) The assertion is true, but the reason is false.            C) The assertion is false, but the reason is true.            D) Both the assertion and the reason are false.</p>
21.	<p>Which of the following represents the volume of revolution generated when the region bounded by <math>y = x^3</math> and the lines <math>x = 0</math> and <math>x = 2</math> is revolved about the x-axis?</p> <p>A) <math>2\pi</math> cu.units            B) <math>4\pi</math> cu.units            C) <math>18\pi</math> cu.units            D) <math>16\pi</math> cu.units</p>
22.	<p>For 1D object with mass density <math>\rho(x) = 2x</math> on the interval <math>[1, 3]</math>, what is the x-coordinate of its center of mass?</p> <p>A) 1            B) 2            C) 4            D) 3</p>
23.	<p><b>Assertion:</b> Exponential growth or decay is described by a specific type of differential equation.  <b>Reason:</b> These differential equations involve a proportional rate of change with respect to the current quantity.</p> <p>A) The assertion is true, and the reason is true, and the reason is a valid explanation for the assertion.            B) The assertion is true, but the reason is false.            C) The assertion is false, but the reason is true.            D) Both the assertion and the reason are false.</p>

24.	<p>A bank account earns interest at a rate proportional to its balance. If an account has an initial balance of ₹10,000 and earns 8% interest annually, what is the differential equation describing the growth of the account's balance over time?</p> <p>A) <math>\frac{dB}{dt} = 0.08B</math>  B) <math>\frac{dB}{dt} = 0.8B</math>  C) <math>\frac{dB}{dt} = 0.008B</math>  D) <math>\frac{dB}{dt} = 0.0008B</math></p>
25.	<p><b>Assertion:</b> The sum of vectors <math>A=3i-2j</math> and <math>B=-i+4j</math> is <math>A+B=2i+2j</math>.  <b>Reason:</b> The addition of vectors involves adding their corresponding components.</p> <p>A) The assertion is true, and the reason is true, and the reason is a valid explanation for the assertion.  B) The assertion is true, but the reason is false.  C) The assertion is false, but the reason is true.  D) Both the assertion and the reason are false.</p>
26.	<p><b>What is the magnitude of the vector <math>V=2i+3j-6k</math>?</b></p> <p>A) 5  B) 6  C) 7  D) 8</p>
27.	<p><b>What is the angle between vectors <math>A=2i+3j</math> and <math>B=i-2j</math>?</b></p> <p>A) 30 degrees  B) 45 degrees  C) 60 degrees  D) 90 degrees</p>
28.	<p><b>What is the vector equation of a line passing through the points (1, 2, 3) and (3, 4, 5)?</b></p> <p>A) <math>r = (1,2,3) + t(2i + 2j + 2k)</math>  B) <math>r = (1,2,3) + t(3i + 4j + 5k)</math>  C) <math>r = (1,2,3) + t(i + j + k)</math>  D) <math>r = (1,2,3) + t(i + 2j + 3k)</math></p>
29.	<p><b>What is the equation of the plane that passes through the points P(1, 2, 3), Q(2, 1, -1), and R(3, -1, 2) in three-dimensional space?</b></p> <p>A) <math>x-y+z=1</math>  B) <math>2x-3y+4z=5</math>  C) <math>3x-2y+4z=6</math>  D) <math>x+y+z=6</math></p>
30.	<p><b>Assertion:</b> The coordinates of the intersection point of the line passing through A(1, 2, 3) and B(3, 4, 5) with the plane <math>2x - y + z = 7</math> can be determined.</p>

	<p><b>Reason:</b> When a line intersects a plane, there is a unique point of intersection that can be calculated using the equations of the line and the equation of the plane.</p> <p>A) Both the assertion and the reason are true, and the reason is the correct explanation of the assertion.  B) Both the assertion and the reason are true, but the reason is not the correct explanation of the assertion.  C) The assertion is true, but the reason is false.  D) Both the assertion and the reason are false.</p>
31.	<p><b>Given three points A(1, 2, 3), B(4, 5, 6), and C(7, 8, 9), which of the following statements is true?</b></p> <p>A) A, B, and C are collinear.  B) A, B, and C are non-collinear.  C) A and B are collinear, but C is not.  D) A and C are collinear, but B is not.</p>
32.	<p><b>What are the coordinates of the midpoint of the line segment joining the points P(3, 2, 1) and Q(1, 5, 7)?</b></p> <p>A) (4, 3.5, 4)  B) (2, 3.5, 4)  C) (2, 3.5, 5)  D) (3, 4, 4)</p>
33.	<p><b>A mobile phone manufacturing company in India assembles two models of phones, Model A and Model B. Model A sells for ₹15,000 per unit and costs ₹8,000 to produce, while Model B sells for ₹12,000 per unit and costs ₹6,000 to produce. The company can assemble a maximum of 500 phones per day and has 400 hours of labor available. If they want to maximize their profit, which of the following represents the correct combination of units of Model A and Model B they should assemble?</b></p> <p>A) Assemble 200 units of Model A and 300 units of Model B  B) Assemble 250 units of Model A and 250 units of Model B  C) Assemble 300 units of Model A and 200 units of Model B  D) Assemble 350 units of Model A and 150 units of Model B</p>
34.	<p><b>A bakery produces two types of cakes, Chocolate and Vanilla. Each Chocolate cake sells for ₹200, and each Vanilla cake sells for ₹150. The bakery has a total of 60 hours of baking time available each day. Baking one Chocolate cake requires 4 hours, while baking one Vanilla cake requires 3 hours. What is the maximum revenue the bakery can generate in a day if they want to maximize their revenue?</b></p> <p>A) ₹2,500  B) ₹3,000  C) ₹3,500  D) ₹4,000</p>

35.	<p>A toy store sells two types of toys, Cars and Dolls. Each Car sells for ₹300, and each Doll sells for ₹200. The store has 400 units of shelf space available. Displaying one Car requires 2 units of shelf space, while displaying one Doll requires 3 units of shelf space. What is the maximum revenue the store can generate if they want to maximize their revenue?</p> <p>A) ₹3,000 B) ₹3,500 C) ₹4,000 D) ₹4,500</p>
36.	<p><b>Assertion:</b> When rolling a six-sided die, the probability of getting an even number is <math>\frac{3}{6}</math>. <b>Reasoning:</b> A standard six-sided die has the numbers 1, 2, 3, 4, 5, and 6. Out of these, three numbers (2, 4, and 6) are even. Therefore, the probability of getting an even number is <math>\frac{3}{6}</math>.</p> <p>A) Both the assertion and the reasoning are true, and the reasoning is the correct explanation of the assertion. B) Both the assertion and the reasoning are true, but the reasoning is not the correct explanation of the assertion. C) The assertion is true, but the reasoning is false. D) Both the assertion and the reasoning are false.</p>
37.	<p>A box contains 6 red balls, 5 green balls, and 4 blue balls. If two balls are drawn at random (without replacement) from the box, what is the probability that one is red and the other is blue?</p> <p>A) <math>\frac{3}{14}</math> B) <math>\frac{9}{28}</math> C) <math>\frac{1}{14}</math> D) <math>\frac{6}{13}</math></p>
38.	<p>In a research study involving a large population of people in India, it was found that 30% of the participants are vegetarians, 40% consume dairy products regularly, and 15% are both vegetarians and consume dairy products regularly. Additionally, 20% of the participants are non-vegetarians who consume dairy products regularly.</p> <p>What is the probability that a randomly selected participant is either a vegetarian or consumes dairy products regularly?</p> <p>A) 55% B) 45% C) 50% D) 35%</p>
39.	<p>In a standard deck of cards, there are 52 cards, including 4 suits (hearts, diamonds, clubs, spades) with 13 cards each. If two cards are drawn one after the other (without replacement), what is the probability that the first card is a</p>

	<p>diamond and the second card is a heart?</p> <p>A) <math>1/52</math>  B) <math>1/51</math>  C) <math>1/26</math>  D) <math>1/169</math></p>
40.	<p>A box contains 8 chocolates, of which 3 are dark chocolates and 5 are milk chocolates. If 2 chocolates are drawn at random (without replacement), what is the probability that both chocolates are dark chocolates?</p> <p>A) <math>3/28</math>  B) <math>2/15</math>  C) <math>6/17</math>  D) <math>1/28</math></p>
41.	<p>A group of friends in India is planning a weekend getaway to a hill station. Two key members of the group, Raj and Priya, play significant roles in deciding the success of the trip. The group has considered the following factors affecting Raj and Priya's participation:</p> <p><b>Raj's Probability of Joining:</b> Raj, being an IT professional in India, often has a busy work schedule. Based on past experiences, there is a 60% chance that Raj will be able to get leave from work and join the weekend getaway.</p> <p><b>Priya's Probability of Joining:</b> Priya, a medical student with a demanding study routine, has a 40% chance of being able to take a break from her studies and join the trip.</p> <p>Given the probabilities mentioned for Raj and Priya's participation, what is the probability that both Raj and Priya will be able to join the weekend getaway to the hill station?</p> <p>A) 10%  B) 15%  C) 22%  D) 24%</p>
42.	<p>You are at a local playground, and you notice a slide that kids love to play on. The slide has a certain angle of inclination with respect to the ground. You want to assess the angle of the slide to ensure it's safe for children.</p> <p>The playground slide has the following measurements:</p> <p>Height of the slide (vertical distance from the base to the top): <math>h</math> meters  Length of the slide (horizontal distance from the base to the top): <math>l</math> meters</p> <p>To find the angle of inclination (<math>\theta</math>) of the slide, which inverse trigonometric function should you use?</p>

	<p>A) <math>\sin^{-1}\left(\frac{h}{l}\right)</math></p> <p>B) <math>\cos^{-1}\left(\frac{h}{l}\right)</math></p> <p>C) <math>\tan^{-1}\left(\frac{h}{l}\right)</math></p> <p>D) <math>\sec^{-1}\left(\frac{h}{l}\right)</math></p>
43.	<p>In a small grocery store, the manager wants to improve inventory management for three products: Apples, Bananas, and Oranges. Here's the information for the current week:</p> <p>On Monday, there were 100 Apples, 50 Bananas, and 75 Oranges in stock.</p> <p>Daily sales for the week are as follows:</p> <ul style="list-style-type: none"> <li>Monday - 20 Apples, 15 Bananas, and 10 Oranges;</li> <li>Tuesday - 15 Apples, 10 Bananas, and 8 Oranges;</li> <li>Wednesday - 25 Apples, 12 Bananas, and 15 Oranges;</li> <li>Thursday - 18 Apples, 20 Bananas, and 12 Oranges;</li> <li>Friday - 22 Apples, 18 Bananas, and 14 Oranges.</li> </ul> <p>What is the matrix representing the remaining inventory of each product at the end of the week?</p> <p>A) <math>\begin{bmatrix} 5 &amp; 20 &amp; 25 \\ 10 &amp; 15 &amp; 5 \\ 10 &amp; 25 &amp; 15 \end{bmatrix}</math></p> <p>B) <math>\begin{bmatrix} 80 &amp; 45 &amp; 60 \\ 15 &amp; 30 &amp; 15 \\ 60 &amp; 25 &amp; 60 \end{bmatrix}</math></p> <p>C) <math>\begin{bmatrix} 80 &amp; 35 &amp; 55 \\ 5 &amp; 20 &amp; 10 \\ 55 &amp; 30 &amp; 60 \end{bmatrix}</math></p> <p>D) <math>\begin{bmatrix} 85 &amp; 35 &amp; 60 \\ 15 &amp; 30 &amp; 20 \\ 60 &amp; 25 &amp; 55 \end{bmatrix}</math></p>
44.	<p>A construction company is planning to build a new bridge across a river. They have three design options for the bridge, each represented by a 3x3 matrix D, E, and F, where each element in the matrix represents a factor influencing the cost and stability of the bridge.</p>

	<p><b>Matrix D:</b></p> $\begin{bmatrix} 1.2 & 0.8 & 1.5 \\ 2.5 & 1.0 & 1.2 \\ 1.8 & 0.9 & 1.4 \end{bmatrix}$ <p><b>Matrix E:</b></p> $\begin{bmatrix} 1.5 & 0.7 & 1.2 \\ 1.8 & 1.2 & 0.9 \\ 0.8 & 2.0 & 1.1 \end{bmatrix}$ <p><b>Matrix F:</b></p> $\begin{bmatrix} 1.1 & 0.9 & 1.8 \\ 1.0 & 1.5 & 1.3 \\ 1.3 & 0.8 & 2.2 \end{bmatrix}$ <p>The construction company wants to choose the bridge design with the most cost-effective and stable construction. Which determinant of the matrix representing the design option should they evaluate to make an informed decision?</p> <p>A) The determinant of Matrix D  B) The determinant of Matrix E  C) The determinant of Matrix F  D) The sum of the determinants of Matrix D, Matrix E, and Matrix F</p>
45.	<p>The integral with respect to <math>x</math> for the following:</p> $\int_{\square}^{\square} \square (3x^2 + 2x - 1) dx$ <p>A) <math>x^3 + x^2 - x + C</math>  B) <math>x^3 + x - 1 + C</math>  C) <math>x^2 + x - 1 + C</math>  D) <math>x^2 + x^{\square} + 1 + C</math></p>
46.	<p>Determine the relationship between the vectors</p> $X = 2i + 3j - 4k$ $Y = 4i - 6j + 8k$ <p>A) They are parallel vectors.  B) They are orthogonal (perpendicular) vectors.  C) They are neither parallel nor orthogonal.  D) There is not enough information to determine their relationship</p>
47.	<p>You own a delivery truck business with two types of trucks, A and B, each having a different fuel consumption rate at various speeds.</p> <p>Truck A consumes fuel at a rate of <math>f_A(v) = 0.05v^2 + 2</math> liters per kilometer, where</p>

	<p><math>v</math> is the speed of the truck in kilometers per hour.</p> <p>Truck B consumes fuel at a rate of <math>f_B(v) = 0.08v^2 + 1</math> liters per kilometer, where <math>v</math> is the speed of the truck in kilometers per hour.</p> <p>If you want to minimize fuel consumption for each truck, what is the optimal speed for each truck to operate at?</p> <p>A) 0 km/h but practically not possible  B) 25 km/h  C) 30 km/h  D) 80 km/h</p>
48.	<p>A ladder of length 10 meters is leaning against a wall. The ladder makes a 60-degree angle with the ground. How far is the bottom of the ladder from the wall?</p> <p>A) 5 meters  B) 10 meters  C) <math>10\sqrt{3}</math> meters  D) <math>5\sqrt{3}</math> meters</p>
49.	<p>Imagine you have a 200-meter-long cable that weighs 0.1 kg per meter. The cable is initially coiled on the ground. You want to lift the entire cable to a platform 10 meters above the ground. Calculate the work done in lifting the cable to the platform.</p> <p>Determine the work done in lifting the entire 200-meter-long cable, which weighs 0.1 kg per meter, to a platform that is 10 meters above the ground.</p> <p>A) 3 joules  B) 5 joules  C) 8 joules  D) 0 joules</p>
50.	<p>Imagine a student is working on a homework assignment, and their typing speed (in words per minute) changes over time. The student's typing speed <math>S(t)</math> as a function of time <math>t</math> in minutes is given by:</p> $S(t) = 2t^2 - t + 3$ <p>How many words can the student type in total during the first 5 minutes of working on the homework, based on the information about their changing typing speed? (Choose the approximate value)</p> <p>A) 99  B) 94  C) 80  D) 76</p>

## ANSWER KEY

1	2	3	4	5	6	7	8	9	10
d	c	a	a	b	d	c	d	c	b
11	12	13	14	15	16	17	18	19	20
a	b	b	a	b	c	a	c	a	a
21	22	23	24	25	26	27	28	29	30
c	c	a	a	a	c	d	a	c	a
31	32	33	34	35	36	37	38	39	40
a	b	c	b	c	a	d	a	c	a
41	42	43	44	45	46	47	48	49	50
d	c	c	c	a	c	a	a	b	b



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